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**SITE INSPECTION PRIORITIZATION REPORT
DAYTON WALTHER CORPORATION
CARROLL COUNTY, KENTUCKY
KYD059564385
MARCH 28, 1995**

PHILLIP J. SHEPHERD
SECRETARY



DATE REPORT ACCEPTED 12-22-95

DISPOSITION NF/RAP

SAM SIGNATURE Ramona K. Jones
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

March 28, 1995

REC'D.

APR 10 1995

WPB-SAS

Ms. Ramona J. Klein
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Site Inspection Prioritization, Dayton Walther Corporation

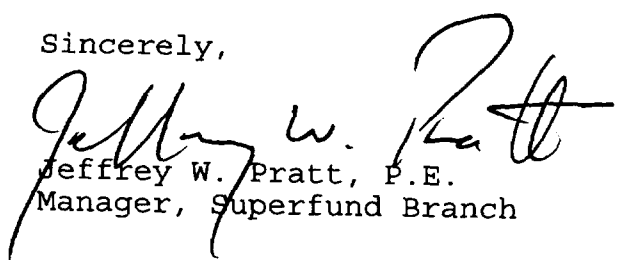
Dear Ms. Klein:

Attached is the Site Inspection Prioritization Report for Dayton Walther Corporation of Carroll County, Kentucky (KYD059564385). The Florence Field Office of this department inspects this facility under the RCRA and KPDES programs. The site was first investigated in 1985 in response to the discovery of 1,1,1-trichloroethylene in groundwater from wells on adjacent property belonging to Dow Corning Corporation, who did not use 1,1,1-trichloroethylene. Dayton Walther once used it as a degreaser in their operations, and had a leak in a collection sump which was repaired. Dow Corning subsequently discovered that an old landfill on their property, active in the 1960's, was the probable source of the contamination.

Recent surface soil contamination resulting from spills around two sumps and where a rail tank car was used to store waste has been excavated and disposed of off site. Tanker trucks are now used to store and haul liquid waste from the plant. The facility is a RCRA Full Quantity Generator and is in compliance with that program. Contaminated soil discovered during the spill cleanup is the result of historic operations. Full characterization is underway at this time, and a report of the findings is due by the first of May.

We do not feel that further action under CERCLA is warranted, although a site score cannot be determined until the latest findings are evaluated. Any necessary remedial action will be handled under state authority.

Sincerely,


Jeffrey W. Pratt, P.E.
Manager, Superfund Branch



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SITE INSPECTION PRIORITIZATION REPORT

DAYTON WALTHER CORPORATION

CARROLL COUNTY, KENTUCKY

KYD059564385

MARCH 28, 1995

Robert Pugh
Superfund Branch
Kentucky Division of Waste Management

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SITE INSPECTION PRIORITIZATION

**DAYTON WALTHER CORPORATION
CARROLL COUNTY, KENTUCKY
KYD059564385**

INTRODUCTION

The Superfund Branch of the Kentucky Division of Waste Management has performed this Site Inspection Prioritization (SIP) under the terms of a cooperative agreement with the United States Environmental Protection Agency and the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). This SIP will update the Site Investigation conducted by NUS Corporation in 1989 using RCRA and CERCLA file material and information obtained on a site visit of December 6, 1994. The appropriate future course of action will be determined based on this information.

SITE DESCRIPTION AND HISTORY

Dayton Walther Corporation is located 4 miles northeast of Carrollton, Kentucky at 7964 Kentucky Drive, which is U.S. 42. Its 46 acres are bounded on the north by cropland and the Ohio River, on the east by cropland, on the south by foothills and on the west by the Dow Corning Corporation. The site is on a relatively flat alluvial plain and drains to the south into McCools Creek which then flows north to the Ohio River. Geographic coordinates are 38°42'30" North latitude, 85°26'30" West longitude (ref. 1).

The Dayton Walther Corporation of Dayton, Ohio owns this Facility. Brake drums and other automotive parts are manufactured in two separate operations at the site. First, Carrollton Castings produces cast parts by melting scrap iron and molding it in foundry sand. The castings are then taken to the machining plant next door where they are tooled and finished to create final products for shipping.

Dayton Walther, Carrollton has been in operation since 1972. Waste oil was reported spilled from a collection sump on April 12, 1983. There are two waste oil sumps on the west side of the machining building which have automatic, level activated pumps to prevent overflow. A pump malfunction (failure) caused the overflow. The sumps contain cutting oil and floor washings, which in the early years of operation contained solvents used for degreasing of machinery. These solvents included 1,1,1-trichloroethane (TCA) and tetrachloroethylene (PCE). Dow Corning has a silicone plant adjacent to the west of Dayton Walther with groundwater withdrawal and monitoring wells. In May of 1985, traces of TCA were detected in samples from one of these wells. Since Dow Corning did not use

TCA, it was suspected that Dayton Walther was the source. According to personnel at the time, however, there had never been a leak in either sump and it was subsequently determined that an old landfill at Dow Corning, active in the 1960's, was the probable source of the contamination. In March and again in April of 1994 there were spills when the tank car into which the sumps were pumped overflowed. The practice at the time was to use the tank car for storage and when it was full it was pumped off into tank trucks for disposal off site. As a result of these spills, that practice has been changed to eliminate the rail car. The sumps are now pumped directly to tank trucks and shipped as necessary to prevent overflow. Apparently this has reduced risk of spillage. Contaminated soil from around the sumps and from the overflows has been removed from the site and properly disposed of. Dayton Walther now uses a non-hazardous, biodegradable degreaser (ref. 2). Dayton Walther has not been able to clean up the impacted soils to background levels and is in the process of characterizing the extent of contamination from the known spills and from historic operations. The site has been in use since 1967 and ongoing minor spills of similar wastes have accumulated in the area. They have retained a consultant and should have a remediation plan in the near future (ref. 3).

GROUNDWATER PATHWAY

This site is located in the Ohio River valley, a steep-sided, U-shaped trough formed during the Pleistocene Age when glacial melts eroded the limestone bedrock. Deposition of two layers of alluvium then filled the trough to a thickness of 180 feet. The lower strata is boulders and gravel topped with coarse sand. Above this is a layer of silt, clayey silt and fine sand, with lenses of gravel and coarse sand. Silurian, Devonian and Mississippian limestones and shales form the bedrock.

The alluvial aquifer is used for water in the Ohio River valley. It is 150 feet thick and flows northward to the river, except during periods of high water, when flow is reversed. Depth to the water table is about 50 feet in the area of the Dayton Walther plant. The Silurian Limestone underlying the alluvial aquifer has highly mineralized water and is not used due to the abundant supply at shallower depths. The two aquifers are hydrologically connected. The aquifer of concern is the alluvial aquifer, which receives recharge from the Ohio River, the Silurian Limestone and from precipitation. The average annual precipitation in the area is 41.5 inches, of which 6.5 inches percolates into the soil. The 2-year, 24 hour rainfall for Carroll County is 3.1 inches (ref.4).

The soil at this site is classified as the Wheeling series which consists of deep, well-drained, nearly level and strongly sloping

soils on stream terraces along the Ohio River. These soils formed in alluvium of mixed origin. They are underlain by sand and gravel at a depth of 3 to 5 feet. The root zone is deep, permeability is moderate and runoff is slow to medium. Available moisture capacity is high and organic matter content is low (ref. 5).

The principal groundwater user in the area is Dow Corning. They have 13 wells screened in the alluvial aquifer and are permitted to withdraw up to 15 million gallons per day (ref.6). This tremendous drawdown must create a cone of depression that alters groundwater flow under the Dayton Walther plant. Any contamination migrating from surface soils at Dayton Walther would be pulled into the well field at Dow Corning. The 260 employees at Dow Corning are groundwater targets, but as this water is monitored and municipal water is available the risk to their health is minimal.

SURFACE WATER PATHWAY

Surface water from the site flows east from the southern end of the property and enters McCools Creek 1500 feet from the site boundary. This creek then flows north 5000 feet to the Ohio River. The 15 mile surface water pathway ends at river mile 554 near the Carroll County line. There are no surface water intakes within this target distance. The KPDES discharge from the site is about 22,000 gallons a day. McCools Creek is a slow moving stream and the discharge of the Ohio River averages 114,500 cubic feet per second at Markland Dam at river mile 531.5, the closest gauging station to the site (ref. 7). The Ohio River is used for recreation and both commercial and recreational fishing. There are three federally endangered species in the river habitat. One is a tern and two are mussels.

SOIL EXPOSURE AND AIR PATHWAYS

The site is fenced so only employees are potentially exposed to any soil contamination on site. Particulate emissions are controlled by baghouses on the foundry cupola. According to 1980 census data, 5917 people live within a 4-mile radius of the site. These people are concentrated in the Town of Ghent, 3 miles northeast of the site, and part of Carrollton, 4 miles southwest of the site. A few people live in scattered locations between the towns. There are no schools or day care centers near the site. No stressed vegetation was seen during the site visit of December 6, 1994.

CONCLUSION

The Dayton Walther Corporation site was evaluated to assess the threat to human health and the environment and to determine the need for additional investigation. From the information gathered in this study of the site it is recommended that the company be

SIP - Dayton Walther
March 28, 1995
Page4

allowed to proceed with site characterization and submit a plan for remediation of contaminated soils and any other contaminants found on site. Air emissions, surface water discharge and solid waste disposal are being monitored by relevant State programs.

REFERENCES

1. USGS 7.5 Minute Topographic Maps, Vevay South Quadrangle and Carrollton Quadrangle.
2. NUS Corporation, Final Screening Site Inspection Report, Dayton Walther Corporation, Carrollton, Kentucky, 1989.
3. David M. Rymph, Manager Environmental Compliance, Dayton Walther Corp, Letter to Deborah Lucas Angel, Environmental Control Supervisor, Kentucky Division of Waste Management, August 4, 1994.
4. Commonwealth of Kentucky, Department for Natural Resources and Environmental Protection, Bureau of Natural Resources, Division of Water Resources, Rainfall Frequency Values for Kentucky, Revised 1979.
5. USDA Soil Conservation Service, Soil Survey of McClean and Muhlenberg Counties, Kentucky, 1980.
6. Commonwealth of Kentucky, NREPC, DEP, Division of Water, Permit to Withdraw Public Water, #0586, Revised December 7, 1994.
7. USGS, Water-Data Report KY-93-1, Water Resources Data, Kentucky Water Year 1993, p.58.

PHILLIP J. SHEPHERD
SECRETARY



BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

October 12, 1995

Ms. Ramona McConney
USEPA, Region IV
North Superfund Remedial Branch
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Ms. McConney:

I have attached the latest sampling data from the Dayton Walther Carrolton Machining Center. The site is still being monitored by the Florence Field Office under the RCRA program. The company appears to be trying to clean up their site, therefore we do not believe further action under CERCLA is warranted. If you want to continue to receive sampling data we will be glad to forward it to you.

Sincerely,

A handwritten signature in cursive script that reads "Robert Pugh".

Robert Pugh
Federal Superfund Section



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REMEDIAL SITE ASSESSMENT DECISION - EPA REGION IV

Site Name: Dayton Walther Corp. EPA ID#: KYD059564385

Alias Site Names: _____

City: Carrollton County or Parish: Carroll State: KY

Refer to Report Dated: 4-10-95 Report type: SIP

Report developed by: Robert Pugh. KDEP

DECISION:

☒ 1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:

<input checked="" type="checkbox"/> 1a. Site does not qualify for further remedial site assessment under CERCLA (No Further Remedial Action Planned - NFRAP)	<input type="checkbox"/> 1b. Site may qualify for further action, but is deferred to:	<input type="checkbox"/> RCRA <input type="checkbox"/> NRC
---	---	---

☐ 2. Further Assessment Needed Under CERCLA: 2a. (optional) Priority: ☐ Higher ☐ Lower

2b. Activity Type:	<input type="checkbox"/> PA <input type="checkbox"/> SI	<input type="checkbox"/> ESI <input type="checkbox"/> HRS evaluation
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☐ Other: _____

DISCUSSION/RATIONALE:

Site does not score high enough to be a candidate for the NPL due to lack of groundwater targets. Contamination is being addressed under RCRA authority. NFRAP.

Report Reviewed and Approved by: RK McConney Signature: Ramona Klein McConney Date: 12.22.95

Site Decision Made by: RK McConney Signature: Ramona Klein McConney Date: 12.22.95

PHILLIP J. SHEPHERD
SECRETARY



BRERETON C. JONES
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601

December 14, 1995

Ms. Ramona McConney
USEPA Region IV
345 Courtland Street, NE
Atlanta, GA 30365

Dear Ms. McConney:

Enclosed is the Prescore Hazard Ranking System disk for the Dayton Walther site. We still have not received the report on full site characterization so the site was scored with the most recent data available. We will continue to pursue site remediation as a state lead and report any findings that would impact EPA's decision regarding NPL eligibility.

Sincerely,

A handwritten signature in cursive script that reads "Robert Pugh".

Robert Pugh
Federal Superfund Section

c: file



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Record Information

1. Site Name: DAYTON WALTHER CORP
(as entered in CERCLIS)
2. Site CERCLIS Number: KYD059564385
3. Site Reviewer: ROBERT PUGH
4. Date: 11/28/95
5. Site Location: CARROLLTON/CARROLL, KENTUCKY
(City/County, State)
6. Congressional District: 4
7. Site Coordinates: Multiple
Latitude: 38 42'30.0" Longitude: 085 26'30.0"

Site Description

1. Setting: Rural
2. Current Owner: Private - Industrial
3. Current Site Status: Active
4. Years of Operation: Active Site , from and to dates: 1967
5. How Initially Identified: State/Local Program
6. Entity Responsible for Waste Generation:
 - Manufacturing
 - Primary Metal Industries
 - Metal Coating
 - Fabr. Struc. Metal Prod.
7. Site Activities/Waste Deposition:
 - Waste Piles
 - Industrial Landfill
 - Spill

Waste Description

8. Wastes Deposited or Detected Onsite:

- Inorganic Chemicals
- Solvents
- Fly and Bottom Ash
- Oily Waste

Response Actions

9. Response/Removal Actions:

- Emergency Waste Removal Has Occurred
- Site Access Has Been Restricted
- Other Removal Action Has Occurred

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- -Treatment, Storage & Disposal Facility
- -Industrial Landfill

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 90.0

14. Residential Population Within 4 Miles: 5917.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)
- Surface Water (within 15 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 260.0

17. Drinking Water Supply System Type for Local Drinking
Water Supply Sources:

- Municipal (Services over 25 People)

18. Surface Water Adjacent to/Draining Site:

- Stream
- River

PREscore 2.0 - PRESCORE.TCL File 05/11/93
HRS DOCUMENTATION RECORD
DAYTON WALTHER CORP - 12/14/95

PAGE: 1

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(City/County, State)
6. Congressional District: 4
7. Site Coordinates: Multiple

Latitude: 38 42'30.0"

Longitude: 085 26'30.0"

	Score
Ground Water Migration Pathway Score (Sgw)	15.16
Surface Water Migration Pathway Score (Ssw)	1.52
Soil Exposure Pathway Score (Ss)	1.20
Air Migration Pathway Score (Sa)	0.25
Site Score	7.64

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Spill

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Spill
b. Source Type	Contaminated Soil
c. Secondary Source Type	N.A.
d. Source Vol.(yd3/gal) Source Area (ft2)	50.00 1500.00
e. Source Volume/Area Value	2.00E-02
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.00E-02

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Lead	< 2	NO	1.2E+01	ppm
Trichloroethane, 1,1,1-	< 2	YES	1.0E-03	ppm

Documentation for Source Type:

Spill was only partially cleaned up and much more contamination was found than expected, indicating ongoing practices resulting in years of potential releases to the soil.

Reference: 2

Documentation for Source Hazardous Substances:

Solvent used to clean and finish products.

Reference: 2

Documentation for Source Volume:

This is an estimate. Over 900 cubic yards of soil and railroad ties have been removed offsite. The extent of remaining contamination has not yet been determined.

Reference: 3

Documentation for Source Area:

This is an estimate.

Reference: 3

WASTE QUANTITY

DAYTON WALTHER CORP - 12/14/95

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No. Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1 Spill	GW-SW-SE-A	2.00E-02	0.00E+00	2.00E-02

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values	HWQVs*	WCVs**
Ground Water	Toxicity/Mobility 1.00E+01	100	6
SW: Overland Flow, DW	Tox./Persistence 1.00E+04	10	18
SW: Overland Flow, HFC	Tox./Persis./Bioacc. 5.00E+05	10	32
SW: Overland Flow, Env	Etox./Persis./Bioacc. 5.00E+06	10	56
SW: GW to SW, DW	Tox./Persistence 4.00E+00	10	2
SW: GW to SW, HFC	Tox./Persis./Bioacc. 1.00E+03	10	10
SW: GW to SW, Env	Etox./Persis./Bioacc. 1.00E+02	10	6
Soil Exposure:Resident	Toxicity 1.00E+04	10	18
Soil Exposure: Nearby	Toxicity 1.00E+04	10	18
Air	Toxicity/Mobility 1.00E+01	10	3

* Hazardous Waste Quantity Factor Values

** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

REFERENCES

DAYTON WALTHER CORP - 12/13/95

1. USGS, Water Data Report KY-93-1, Water Resources Data, Kentucky Water Year 1993.
2. NUS Corporation, Final Screening Site Inspection Report, Dayton Walther Corporation, Carrollton, Kentucky, 1989.
3. David M. Rymph, Manager Environmental Compliance, Dayton Walther Corp. Letter to Debby Angel, Environmental Control Supervisor, KDWM, August 4, 1994.
4. KDWM, Public Inquiry #9503089, 3/24/95.
5. USGS 7.5 Minute Topographic Maps, Vevay South and Carrollton Quadrangles.
6. Kentucky Nature Preserves Commission.
7. Commonwealth of Kentucky, NREPC, DEP, Division of Water, Permit to withdraw Public Water, #0586, Revised Dec. 7, 1994.
8. Commonwealth of Kentucky, NREPC, Division of Water Resources, Rainfall Frequency Values for Kentucky, Revised 1979.
9. USDA Soil Conservation Service, Soil Survey of Carroll, Galatin and Owen Counties, Kentucky, 1980.
10. Federal Register, 12-14-90, Vol. 55 No. 241.



1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710



DRAFT

C-586-2-0-202

February 26, 1990

Mr. A.R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Subject: HRS2 Rescore Project
40 Region IV Sites

Dear Mr. Hanke:

FIT 4 was tasked to conduct preliminary re-scoring of 40 Region IV sites using the draft final version of the revised Hazard Ranking System (version dated December 8, 1989). Re-scoring was completed as of February 9, 1990. Data for all 40 sites, including pathway, threat, and overall site scores based on three versions of the HRS, have been tabulated and are included as Enclosure 1. For your convenience, these sites have also been categorized by site score and are listed in Table 1. In addition, Table 2 lists twelve sites identified as having human food chain concerns and provides the human food chain threat scores from proposed revised to draft final HRS.

A number of sites merit specific discussion based on the re-scoring results. The first group of these consists of sites at which LSIs are either completed or underway. LCP Chemical, Meadowbrook Elementary School, National Southwire Aluminum, and Stauffer Chemical (Tarpon Springs) all have site scores above 30. Mobil Oil, however, receives a site score of 26.76. Indications are that this score may drop further due to planned changes in the model. It is therefore recommended that any further LSI work at Mobil Oil be delayed until the HRS is finalized. The second group contains sites for which LSIs are planned. Terry Creek Dredge Spoil Area and Chemfax, Inc. have site scores greater than 30. However, Blackberry Valley Landfill and American Petrofina have site scores of 13.77 and 3.74, respectively. Therefore, FIT recommends that no further LSI activity be planned for these two sites at this time.

A third group of sites includes those which appear to be candidates for LSIs. These are: Aerodex Pond and Test Cells, Ajax Chemical, Asgrow Florida Company, Cascade Park Gasification Plant, Eureka Springs Landfill, and Potter Company/Wesson. An additional evaluation of each site using the latest (February 15, 1990) version of the rule should, however, be conducted prior to initiating each study plan.

DRAFT

Mr. A.R. Hanke
Environmental Protection Agency
February 26, 1990 - page 2

Several factors have emerged that will have significant impact on data collection and sampling strategy at the SI (and in some cases, the PA) level of investigation. The first of these has been previously identified and requires continued emphasis as a major influence on efficient site screening as well as package-level scoring. This factor is source characterization, and includes information on disposal history, size, and association of specific contaminants for each source at a site. A related issue is the importance of background samples for each medium addressed.

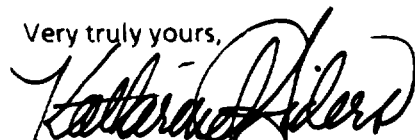
In addition, consideration of "blended water" has been included as of the December 8 version of the rule. One example of this would be a water supply system in which water from wells/intakes within a site's target distance limit is mixed (prior to distribution) with water from unthreatened wells or intakes (i.e., outside the target distance limit). In such a case, only a portion of the system's total population would be considered for scoring as potentially affected by the threatened wells/intakes. Apportionment would also apply in a case where an entire wellfield lies within the 4-mile radius, but spans multiple distance intervals. (The specific methodology for apportionment is still under development). It can therefore be seen that complete and accurate target locations and population information will be critical to scoring.

Finally, it has been found that site scores can be drastically affected by the presence or absence of actual contamination of targets. This is defined as contamination meeting observed release criteria that will then be compared to benchmarks. Targets can include drinking water wells and intakes, fisheries, and sensitive environments. All targets that may be subject to actual contamination must be identified, and should be sampled whenever feasible, in addition to sampling shallow wastes and contaminated soils onsite.

Also enclosed for your convenience is a deliverable prepared by NUS Headquarters Support Team (HST) for EPA Headquarters providing a statistical analysis of these re-scoring results. It should be noted that the scope and intent of the HST project differed in some areas from that of the Region. FIT is available for any related discussion/clarification as desired.

If you have any questions or comments concerning this project, or desire further discussion, please contact me.

Very truly yours,



Katharine A. Siders
LSI/HRS Group Leader

Approved:



KAS/tb

TABLE 1

Site Score ≥ 30	$25 \leq$ Site Score < 30	$10 \leq$ Site Score < 25	Site Score < 10
Aerodex Pond and Test Cells Ajax Chemical Asgrow Florida Co. Cascade Park Gasif. Plant Chemfax, Inc. Crucible, Inc. (RCRA) * Escambia Treating (PRP Agreement) Eureka Springs Landfill LCP Chemical Meadowbrook Elementary School Mobil Chemical (RCRA) National Southwire Aluminum Omnivest Landfill Potter Co./Wesson Red Ridge Landfill * Stauffer Chemical (Tarpon Springs) Terry Creek Dredge Spoil Area Texaco Terminal *	Mobil Oil * S & S Flying Services *	American Olean Tile Plant * Blackberry Valley Landfill * Columbia Organics Chem. * Cotton Grove Road Landfill * Middlesboro Tannery * Southern Wood Piedmont * Superior Products *	American Petrofina Beaunit Mills BMF Industries Bush Bros. Plating Dayton Walther Forbush Metal Finishing General Tire and Rubber Kerr-McGee Chem. Nobles Sludge Pits Seaboard Waste Oil Sulfolk Chemical Tupelo Buried Drum W.R. Grace (site score may increase due to recent SSI)

*: Indicates site score may decrease based on planned changes in the 2/15/90 version

Table 2

**Human Food Chain Threat Scores
Selected Region IV Sites
(Scores rounded to nearest integer)**

Site Name	Proposed Revised	Draft Final (Dec. 1989)
Cascade Park	35	0
Chemfax, Inc.	39	0
Columbia Org.	23	0
LCP Chem.	100	0
Mobil Chem.	55	30
Mobil Oil	58	2
Seaboard Waste Oil	32	0
So. Wood Piedmont	42	0
Stauffer Chem.	100	0
Sulfolk Chem.	43	0
Terry Creek	95	0
W. R. Grace	41	0

**Comparison of Current, Projected Proposed Revised, and Projected
Draft Final (12/15/89) Revised HRS Scores for Region 4 Sites**

Enclosure 1: Page 1 of 2

	Ground Water Pathway			Surface Water Pathway			Soil Exposure Pathway			Air Pathway			Site Score		
Site Name	Current	Proposed Revised	Draft Final	Current	Proposed Revised	Draft Final	Current	Proposed Revised	Draft Final	Current	Proposed Revised	Draft Final	Current	Proposed Revised	Draft Final
Aerodex	(b) (5)														
Ajax Chemical															
American Olean Tile															
American Petrofina															
Asgrow Florida Company															
Beeunit Mills															
Blackberry Valley Landfill															
BMF Industries, Inc.															
Bush Brothers Plating															
Cascade Park Gas Plant															
Chemist															
Columbia Organics															
Cotton Grove Road Landfill															
Crucible, Inc.															
Dayton Walther Corporation															
Escambia Treating															
Eureka Springs Landfill															
Forbush Metal Finishing															
General Tire & Rubber															
Kerr-McGee Chemical															
LCP Chemical															
Meadowbrook Elementary															
Middleboro Tannery															
Mobil Chemical Corporation															
Mobil Oil Corporation															
National Southwire															
Nobles Sludge Pits															
Omnivest Landfill															
Potter Company/Wesson															
Red Ridge Landfill															
S & S Flying Services															
Seaboard Waste Oil															
Southern Wood Piedmont															
Stauffer Chemical															
Suffolk Chemical															
Superior Products															
Terry Creek Dredge Area															
Texaco Terminal															
Tupelo Buried Drum															
W.R. Grace															
Average															
Median															

NS - Not Scored

Averages and medians exclude sites for which a given pathway was not scored.

2/16/90 8:52

DRAFT

Comparison of Current, Projected Proposed Revised, and Projected Draft Final (12/15/89) Revised HRS Scores for Region 4 Sites -- Threat Summary

Enclosure 1: Page 2 of 2

Site Name	Surface Water Pathway Threat Summary											Soil Exposure Pathway Threat Summary					
	Drinking Water		Food Chain		Recreation		Environmental		Pathway Score			Resident		Nearby		Pathway Score	
	Proposed	Draft	Proposed	Draft	Proposed	Draft	Proposed	Draft	Proposed	Draft	Current	Proposed	Draft	Proposed	Draft	Proposed	Draft
	Revised	Final	Revised	Final	Revised	Final	Revised	Final	Revised	Final	Revised	Revised	Final	Revised	Final	Revised	Final
Aerodex	(b) (5)																
Ajax Chemical																	
American Clean Tile																	
American Petrofina																	
Agrow Florida Company																	
Beaukitt Mills																	
Blackberry Valley Landfill																	
BMF Industries, Inc.																	
Bush Brothers Plating																	
Cascade Park Gas Plant																	
Chemtex																	
Columbia Organics																	
Cotton Grove Road Landfill																	
Crucible, Inc.																	
Dayton Walther Corporation																	
Escambia Treating																	
Eureka Springs Landfill																	
Forbush Metal Finishing																	
General Tire & Rubber																	
Kerr-McGee Chemical																	
LCP Chemical																	
Meadowbrook Elementary																	
Middleboro Tannery																	
Mobil Chemical Corporation																	
Mobil Oil Corporation																	
National Southwire																	
Nobles Sludge Pits																	
Omnivest Landfill																	
Potter Company/Wesson																	
Red Ridge Landfill																	
S & S Flying Services																	
Seaboard Waste Oil																	
Southern Wood Piedmont																	
Stauffer Chemical																	
Suffolk Chemical																	
Superior Products																	
Terry Creek Dredge Area																	
Texaco Terminal																	
Tupelo Buried Drum																	
W.R. Grace																	
Average																	
Median																	

NS - Not Scored

Threat scores normalized where applicable.

Averages and medians exclude sites for which a given pathway was not scored.

2/16/90 8:52

Received
DEC 12 1988

PAGE 1

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

DAYTON WALTHER CORPORATION
EPA SITE NUMBER KYD059564385
CARROLLTON
CARROL COUNTY, KY
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY PHIL HENDERSON
OF NUS CORPORATION
ON 11/15/88

DATE OF THIS REPORT: 11/15/88
DATE OF LAST MODIFICATION: 11/15/88

GROUND WATER ROUTE SCORE :	44.84
SURFACE WATER ROUTE SCORE:	0.00
AIR ROUTE SCORE :	0.00
<hr/>	
MIGRATION SCORE :	25.92

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	47 FEET		
DEPTH TO BOTTOM OF WASTE	9 FEET		
DEPTH TO AQUIFER OF CONCERN	38 FEET	2	4
PRECIPITATION	41.0 INCHES		
EVAPORATION	35.0 INCHES		
NET PRECIPITATION	6.0 INCHES	2	2
PERMEABILITY	1.0×10^{-4} CM/SEC	2	2
PHYSICAL STATE		3	3
TOTAL ROUTE CHARACTERISTICS SCORE:			11
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	0		
DRUMS	4		
GALLONS	0		
TONS	0		
TOTAL	1 CU. YDS	1	1
TOTAL WASTE CHARACTERISTICS SCORE:			19
5. TARGETS			
GROUND WATER USE		2	6
DISTANCE TO NEAREST WELL AND	1500 FEET		
MATRIX VALUE		35	35
TOTAL POPULATION SERVED	5071 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	260		
NUMBER OF CONNECTIONS	1266		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			41
GROUND WATER ROUTE SCORE (Sgw) = 44.84			

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	ROUTE NOT SCORED		N/A
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER			
SITE WITHIN CLOSED BASIN			
FACILITY SLOPE			
INTERVENING SLOPE			
24-HOUR RAINFALL			
DISTANCE TO DOWN-SLOPE WATER			
PHYSICAL STATE			
TOTAL ROUTE CHARACTERISTICS SCORE:			N/A
3. CONTAINMENT			N/A
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:			
WASTE QUANTITY	CUBIC YDS		
	DRUMS		
	GALLONS		
	TONS		
	TOTAL		
TOTAL WASTE CHARACTERISTICS SCORE:			N/A
5. TARGETS			
SURFACE WATER USE			
DISTANCE TO SENSITIVE ENVIRONMENT			
COASTAL WETLANDS			
FRESH-WATER WETLANDS			
CRITICAL HABITAT			
DISTANCE TO STATIC WATER			
DISTANCE TO WATER SUPPLY INTAKE			
AND	MATRIX VALUE		
TOTAL POPULATION SERVED			
NUMBER OF HOUSES			
NUMBER OF PERSONS			
NUMBER OF CONNECTIONS			
NUMBER OF IRRIGATED ACRES			
TOTAL TARGETS SCORE:			N/A
SURFACE WATER ROUTE SCORE (S _{sw}) = 0.00			

HRS AIR ROUTE SCORE

<u>CATEGORY/FACTOR</u>	<u>RAW DATA</u>	<u>ASN. VALUE</u>	<u>SCORE</u>
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
 DRUMS
 GALLONS
 TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE:

N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS

0 to 0.25 mile

0 to 0.50 mile

0 to 1.0 mile

0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS

COASTAL WETLANDS

FRESH-WATER WETLANDS

CRITICAL HABITAT

DISTANCE TO LAND USES

COMMERCIAL/INDUSTRIAL

PARK/FOREST/RESIDENTIAL

AGRICULTURAL LAND

PRIME FARMLAND

HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE:

N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: DAYTON WALTHER CORPORATION
AS OF 11/15/88

PAGE 4

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		11
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	19
TARGETS	X	41

$$= 25707 / 57,330 \times 100 = 44.8\% = S_{gw}$$

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		0
CONTAINMENT	X	0
WASTE CHARACTERISTICS	X	0
TARGETS	X	0

$$= 0 / 64,350 \times 100 = 0.00 = S_{sw}$$

AIR ROUTE SCORE

$$\text{OBSERVED RELEASE} \quad 0 / 35,100 \times 100 = 0.00 = S_{air}$$

SUMMARY OF MIGRATION SCORE CALCULATIONS

	<u>S</u>	<u>S²</u>
GROUND WATER ROUTE SCORE (S_{gw})	44.84	2010.63
SURFACE WATER ROUTE SCORE (S_{sw})	0.00	0.00
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_{air}^2$		2010.63
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_{air}^2}$		44.84
$S_M = \sqrt{S_{gw}^2 + S_{sw}^2 + S_{air}^2} / 1.73$		25.92



CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-3 (0-2)	B-3 (2-4)	B-3 (18-20)
PAHs mg/kg	ND	ND	ND
METALS, TOTAL mg/kg			
BARIUM	88	-	-
CHROMIUM	9.4	-	-
LEAD	13	-	-

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-2 (1-3)	B-2 (5-7)	B-2 (18-20)
PAHs mg/kg	ND	ND	ND

SEP 15 1995

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-6 (0-2)	B-6 (6-8)	B-6 (13-15)
PAHs mg/kg	ND	ND	ND
METALS, TOTAL mg/kg			
ARSENIC	12	-	-
BARIUM	53	-	-
CHROMIUM	16	-	-
LEAD	12	-	-
VOCs mg/kg	ND	-	-
PCBs mg/kg	ND	-	-

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-5 (0-2)	B-5 (8-10)	B-5 (18-20)
PAHs mg/kg	ND	ND	ND

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-1 (1-3)	B-1 (9-11)	B-1 (13-15)
PAHs mg/kg	ND	ND	ND

LEGEND

- PROPERTY LINE
- FENCE
- B-1 ● APPROXIMATE SOIL BORING LOCATION
- (PAHs) POLYNUCLEAR AROMATIC HYDROCARBONS
- (VOCs) VOLATILE ORGANIC COMPOUNDS
- (PCBs) POLYCHLORINATED BIPHENYLS
- FT BGL FEET BELOW GROUND LEVEL
- mg/kg MILLIGRAMS PER KILOGRAM
- ND NOT DETECTED
- NOT ANALYZED

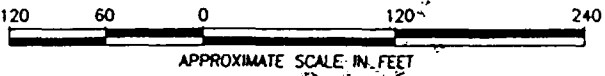
CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-10 (0-2)	B-10 (8-10)	B-10 (18-20)
PAHs mg/kg	ND	ND	ND

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-7 (0-2)	B-7 (8-10)	B-7 (18-20)
PAHs mg/kg	ND	ND	ND

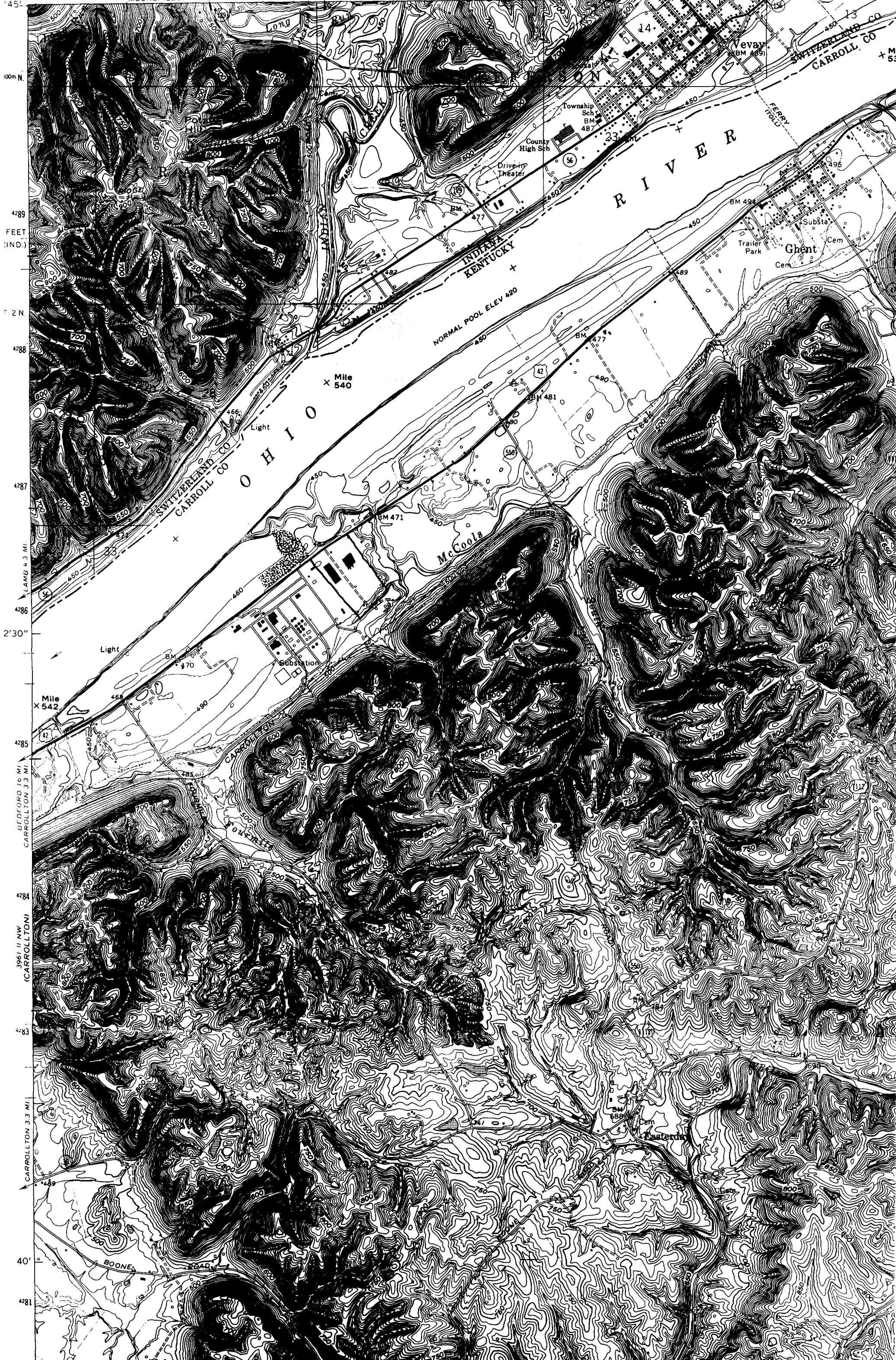
CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-8 (0-2)	B-8 (8-10)	B-8 (18-20)
PAHs mg/kg	ND	ND	ND

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-9 (0-2)	B-9 (5-8)	B-9 (13-15)
PAHs mg/kg			
BENZO(b)FLUORANTHENE	ND	1.0	ND
BENZO(k)FLUORANTHENE	ND	1.0	ND
METALS, TOTAL mg/kg			
BARIUM	-	33	-
CHROMIUM	-	11	-
LEAD	-	6.4	-
VOCs mg/kg	-	ND	-
PCBs mg/kg	-	ND	-

CONSTITUENTS	SAMPLE ID (FT. BGL)		
	B-4 (0-3)	B-4 (3-5)	B-4 (18-20)
PAHs mg/kg	ND	ND	ND



				DESIGNED		DAYTON WALTHER CARROLLTON MACHINE CENTER CARROLLTON, KENTUCKY				 LAW ENGINEERING AND ENVIRONMENTAL SERVICES LAW ENVIRONMENTAL, INC. 9410 BUNSEN PARKWAY SUITE 300 LOUISVILLE, KENTUCKY 40241 (502) 495-5800 FAX (502) 495-5801		DISTRIBUTION OF CONSTITUENTS DETECTED IN SOIL MARCH, 1995		SCALE GRAPHICAL PROJECT NO. 50532-5-0031 DWG. NO. REV. FIGURE - - 3		CADD FILE: 61869 PLOT DATE: 4/14/95											
				DRAWN J.C.M.																							
				CHECKED RAK																							
				IN CHARGE																							
REV DATE BY SUB APP DESCRIPTION				DATE		SUBMITTED		APPROVED																			



U . S . E P A R E G I O N I V

SDMS

Unscannable Material Target Sheet

DocID: 77673

Site ID: KYD059564385

Site Name: Dayton Walther Corp

Nature of Material:

Map: ✓

Computer Disks: _____

Photos: _____

CD-ROM: _____

Blueprints: _____

Oversized Report: _____

Slides: _____

Log Book: _____

Other (describe): _____

Amount of material: 1

Please contact the appropriate Records Center to view the material.

**FINAL
SCREENING SITE INSPECTION REPORT
DAYTON WALTHER CORPORATION
CARROLLTON, KENTUCKY
EPA ID #KYD059564385**

Prepared Under
TDD No. F4-8802-21
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

**WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY**

JANUARY 17, 1989

**NUS CORPORATION
SUPERFUND DIVISION**

Prepared By


Phillip Henderson
Project Manager

Reviewed By


Greg Schank
Assistant Regional
Project Manager

Approved By


Murray Warner, P.E.
Regional Project Manager

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APPENDIX A Topographic Map

APPENDIX B Analytical Results

APPENDIX C Site Investigation Form

EXECUTIVE SUMMARY

Dayton Walther Corporation produces brake drums for tractor trailers in a two-part operation that uses a foundry and a machining center. The brakes are cast in sand molds at the foundry and then moved to the machining center where the finished product is produced. The plant has been in operation since 1972.

In May of 1985, Dayton Walther was referred to the Kentucky Uncontrolled Site Section following an inspection by the Division of Waste Management. According to the Preliminary Assessment completed as a result of this inspection, Dayton Walther had at one time used 1,1,1-trichloroethane (TCA) as a degreaser in plant operations at the machining center. Floor washings from the plant, and therefore possibly TCA, ended up in the waste oil sumps. During the inspection, the plant manager at Dayton Walther stated that one of the sumps had leaked in the past. At this time, Dow Corning, located adjacent to Dayton Walther, was detecting traces of TCA in their onsite monitoring wells. Since Dow was regulated under RCRA and did not use TCA in any of their current operations, it was suspected that Dayton Walther was the source. Dow Corning now attributes the TCA found in their monitoring wells to an old landfill on their property that was active in the 1960's. Based on this information, and information collected during the Field Investigation, the groundwater contamination can no longer be solely attributed to Dayton Walther.

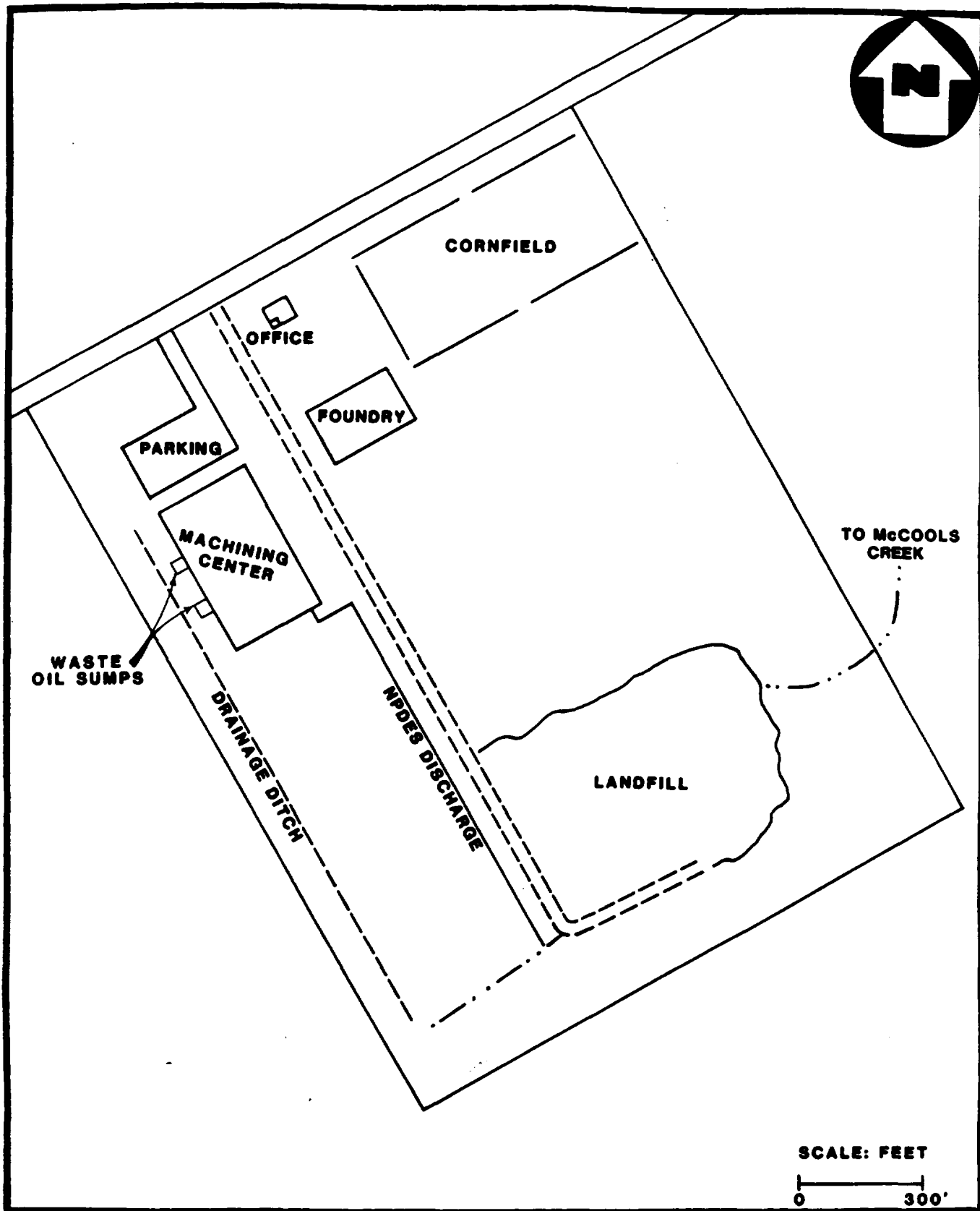
The facility is located in the Ohio River Valley which is a steep-sided, U-shaped trough, formed by erosion of limestone bedrock by glacial melts during the Pleistocene age. The trough was then filled with alluvium. The thickness of these alluvial sediments is approximately 150 feet. These deposits form a productive alluvial aquifer which is recharged by local rainfall and at times by the Ohio River. Depth to the water table is about 50 feet and groundwater flow is generally toward the Ohio River. Underlying the alluvial aquifer is the Silurian limestone aquifer. Due to the availability of groundwater in the alluvial aquifer and the high mineral content of water within the limestone aquifer it is not used in the study area. The Silurian limestone aquifer is hydrologically connected to the alluvial aquifer and does provide some recharge to it.

Groundwater contamination and, to a lesser extent, surface water contamination, are the primary pathways of concern. The nearest well is located 1500 feet to the west, on the property of Dow Corning. This well is used by 260 persons. There are also four municipal wells in the town of Ghent that service 1266 meters. These wells are approximately 2.7 miles northeast of the site. Surface

water runoff and discharges from Dayton Walther eventually enter the Ohio River which is used for commercial and recreational fishing.

Analytical results of samples collected during this investigation show that surficial soils in the immediate vicinity of the waste oil sumps are contaminated. However, subsurface soil samples collected at a depth slightly below that of the bottom of the waste oil sumps show less contamination.

Based on the findings of this study FIT 4 recommends that this site be reevaluated under the revised HRS as a candidate for a Listing Site Inspection.



**SITE LAYOUT MAP
DAYTON WALTHER CORPORATION
CARROLLTON, KENTUCKY**

FIGURE 2





DAYTON WALTHER

Dayton Walther Corporation
P.O. Box 1022
Dayton, Ohio 45401
Telephone 513/296-3113

August 4, 1994

VIA OVERNIGHT COURIER

Ms. Deborah Lucas Angel
Environmental Control Supervisor
Florence Regional Office
Kentucky Division of Waste Management
7964 Kentucky Drive, Suite 8
Florence, KY 41042

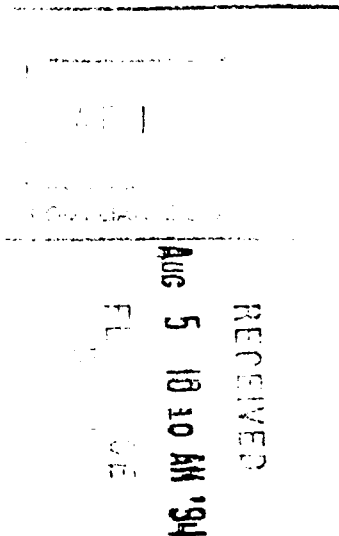
Re: ERT#A3648 and A2806

Dear Ms. Angel:

This is response to your July 8, 1994, letter and to provide you a status report of the ongoing remedial activities for the petroleum spills that occurred on March 21, 1994 and April 7, 1994. This letter supplements the previous letters addressed to William C. Berger dated March 22, 1994 and April 13, 1994. In summary, the Carrollton Machine Center (CMC) has conducted an initial response including the removal of all accumulated free product, two phases of excavation of petroleum impacted soils, removal of accumulated rain water/ground water from the excavations, and conducted an initial sampling of the bottom and side walls of the excavated area.

The CMC has been used continuously since 1967 for the machining of various automotive and heavy duty truck parts. As discussed in the letters from Geoffrey Lieberman to William C. Berger dated March 22, and April 13, 1994, petroleum impacted soils and pockets of oil from historic operations were encountered during the excavation for these two spills. To date, Dayton Walther has not been able to separate the petroleum impacts from these two recent spills from historic operations at the facility due to the similarity of the products involved. To date, Dayton Walther has been unable to reach background levels of oil and grease after pumping tens of thousands of gallons of liquid including free product and accumulated rain water and after the removal and off-site disposal of 908 total cubic yards of petroleum impacted soils and railroad ties from these two recent spills and the historic operations.

Since the receipt of the analytical results of the excavation on June 10, Dayton Walther Corporation has solicited proposals from three environmental consulting firms for alternatives to the original strategy of excavation/pump and haul with off-site disposal. Those three firms



Ms. Deborah Lucas Angel

August 4, 1994

Page 2

included The Payne Firm of Cincinnati, Ohio; the Evergreen Group of Crestwood, Kentucky, and Law Environmental of Louisville, Kentucky. Based on the proposals and interviews of the consulting firms, Dayton Walther Corporation has selected Law Environmental, Inc. as their consultant to conduct a site assessment and develop remedial alternatives for the remaining residually impacted soils. Dayton Walther is currently developing a scope of work for the initial phase of a site assessment with Law Environmental. The results of the site assessment will be provided to the state of Kentucky upon completion.

Attached per your request of July 8, you will find the following information:

Appendix A - Clean up material and excavated soils - attached are special waste tracking documents acknowledging a receipt by Waste Management of Kentucky, Inc. for 908 cubic yards of petroleum contaminated soil, rail road ties, dirt, and rocks impacted from the recent spills and historic operations.

Appendix B - Amounts of recovered product - All industrial wastewater from CMC Center is pumped and hauled daily for off-site disposal at Lubrichem Environmental in Elizabethtown, Kentucky. The industrial waste water from our facility includes machine coolants, tramp oils and floor cleaning solutions. All spilled product, potentially impacted stormwater, as well as accumulated groundwater within the excavations were pumped and co-mingled with our industrial waste water at the time of the initial response to the spills. CMC does not have an accurate amount of the actual recovered product. Attached is a summary of the waste hauling records for the months of March and April for the industrial wastewater including coolant and waste oil hauled to Lubrichem Environmental. The increased volumes of water for the period immediately following March 21 and April 7, can be attributed to the pumping by the vacuum truck in the immediate vicinity of the oil spill as well as the conservative approach to pump and dispose of all accumulated groundwater and potentially impacted stormwater in the vicinity of the spill areas.

Appendix C - Analytical results of any environmental monitoring - Attached is a site plan showing the approximate extent of the soil excavation. A site plan for the sampling locations summary of analytical results, and the original laboratory sheets for the oil and grease sampling in the vicinity of the soil excavation.

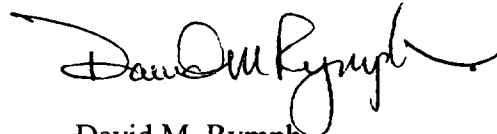
Ms. Deborah Lucas Angel
August 4, 1994
Page 3

Appendix D - Copies of proposals - Attached are copies of proposals received from Law Environmental, Evergreen Group and The Payne Firm for site assessments at the Carrollton Machine Center.

The initial response activities to date by Dayton Walther has eliminated any imminent substantial danger to the public health and the environment from the two spills. Through the assistance of our consultant, CMC will characterize the extent of the release as necessary to determine the affect of the release on the environment. We shall take actions necessary to correct the affect of the release on the environment and will continue to update the commonwealth of Kentucky on the results of the site assessment activities per KRS 224.01-400.

If there are any further questions regarding this report, please do not hesitate to contact me at 313-513-4469 or Geoffrey Lieberman at the Carrollton Machine Center, 502-732-6635.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David M. Rymph", with a stylized flourish at the end.

David M. Rymph
Manager Environmental
Compliance

DMR/tlk

cc: Geoffrey Lieberman

DIVISION OF WATER RESOURCES
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
ENGINEERING MEMORANDUM NO. 2 (4-30-71), REVISED (6-1-79)

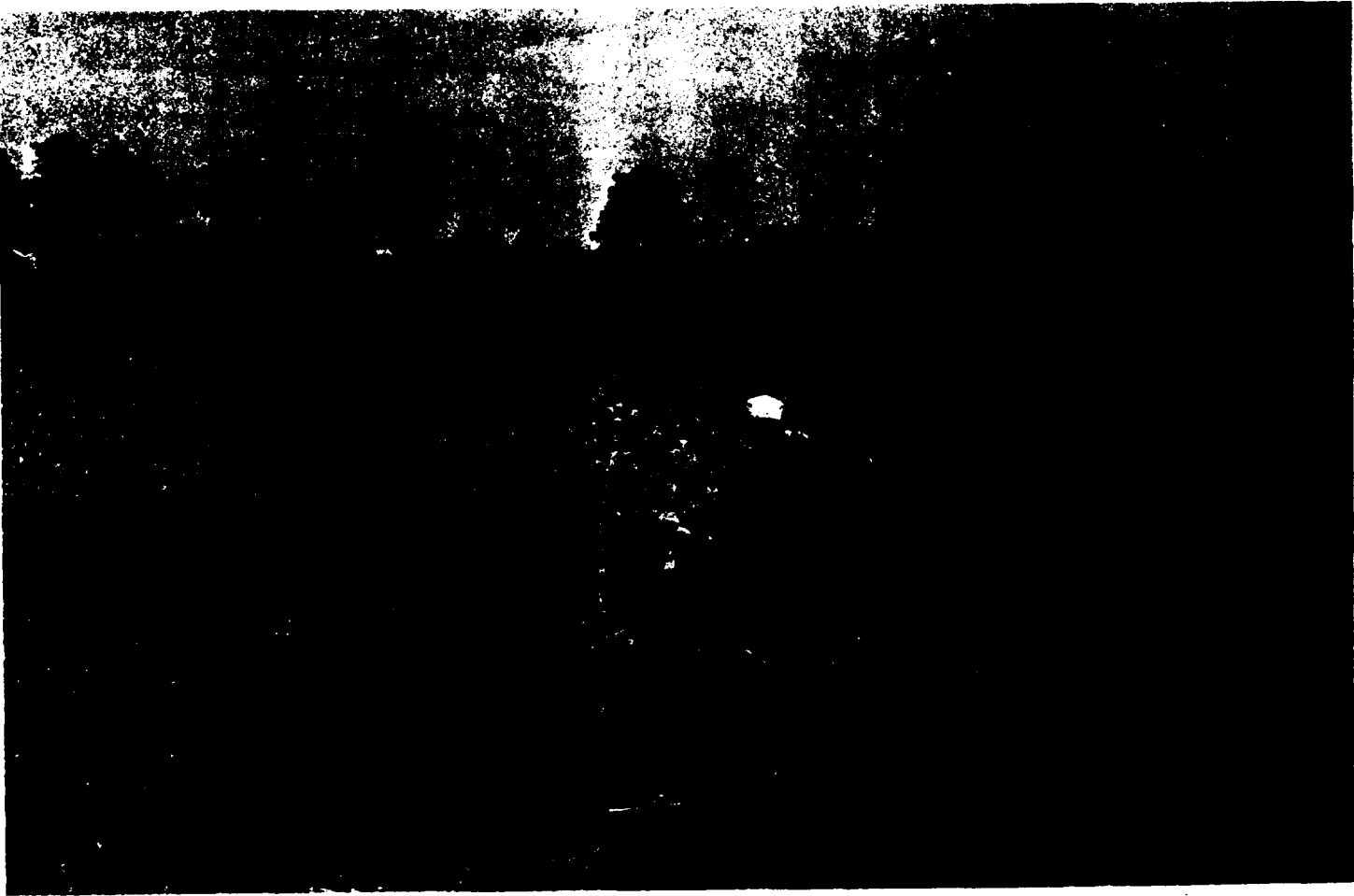
24 HOUR RAINFALL (INCHES)

PAGE 1 OF 3

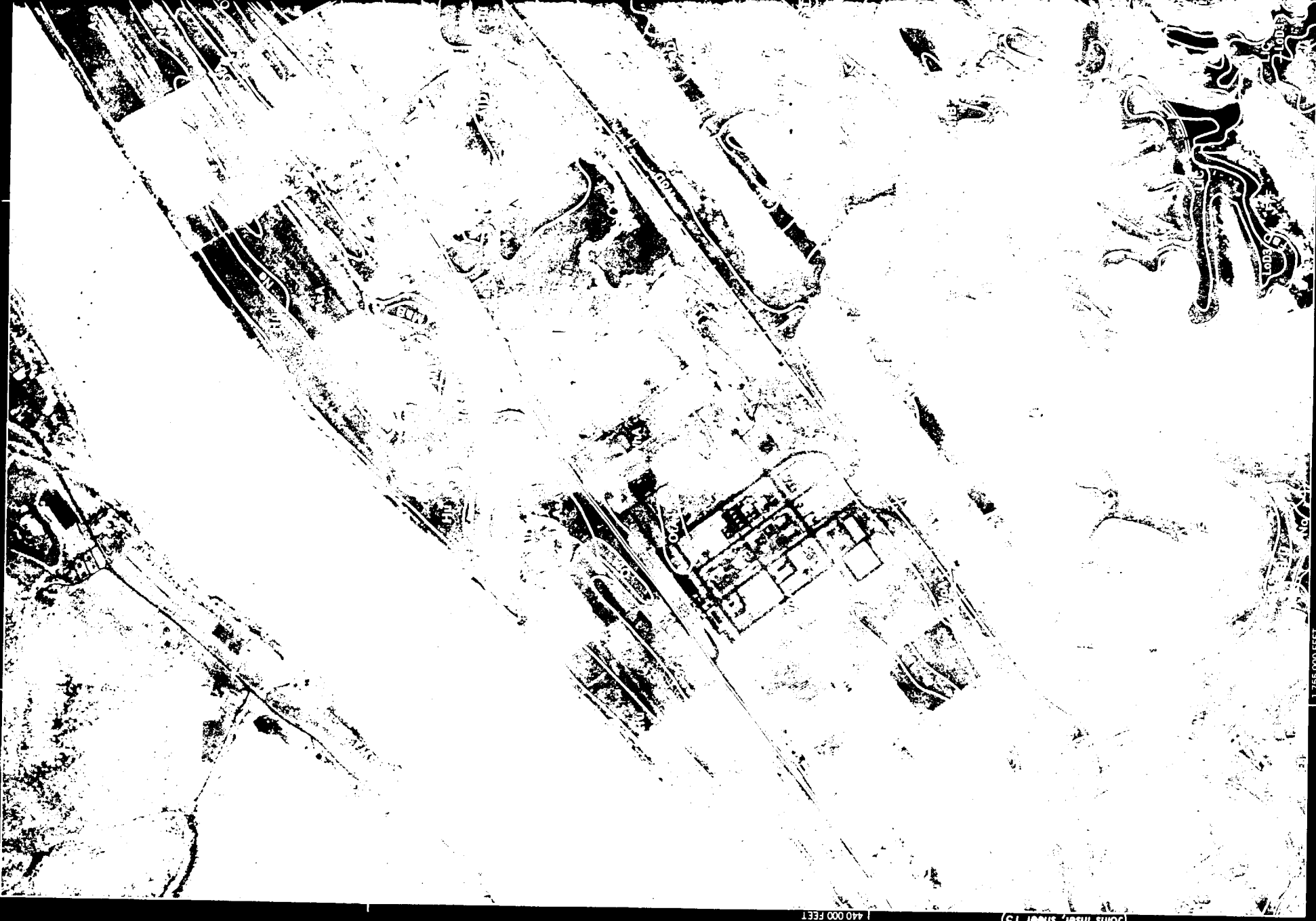
	FREQUENCY (YEARS)							
COUNTY	1	2	5	10	25	50	100	PMP

ADAIR	2.8	3.3	4.1	4.6	5.4	5.9	6.4	36.5
ALLEN	2.8	3.4	4.3	4.8	5.6	6.1	6.6	37.0
ANDERSON	2.7	3.1	3.9	4.4	5.2	5.6	6.2	35.0
BALLARD	3.1	3.6	4.5	5.1	5.8	6.5	7.0	36.5
BARREN	2.8	3.3	4.2	4.7	5.5	6.0	6.5	36.5
BATH	2.5	3.0	3.7	4.2	4.9	5.4	5.9	35.0
BELL	2.6	3.1	3.9	4.5	5.2	5.8	6.3	37.0
BOONE	2.6	3.0	3.7	4.2	4.9	5.4	5.9	34.0
BOURBON	2.6	3.0	3.8	4.3	5.0	5.4	6.0	35.0
BOYD	2.5	2.7	3.5	4.0	4.6	5.0	5.5	35.0
BOYLE	2.7	3.2	4.0	4.5	5.2	5.7	6.3	35.5
BRACKEN	2.5	3.0	3.7	4.2	4.9	5.3	5.8	34.5
BREATHITT	2.6	3.0	3.7	4.3	4.9	5.4	5.9	36.0
BRECKINRIDGE	2.8	3.3	4.1	4.6	5.4	5.9	6.4	35.5
BULLITT	2.7	3.2	4.0	4.5	5.2	5.7	6.3	35.5
BUTLER	2.9	3.4	4.2	4.8	5.5	6.1	6.6	36.0
CALDWELL	3.0	3.4	4.3	4.9	5.6	6.3	6.8	36.5
CALLOWAY	3.1	3.5	4.4	5.0	5.8	6.5	6.9	37.0
CAMPBELL	2.5	3.0	3.7	4.2	4.9	5.3	5.8	34.0
CARLISLE	3.1	3.6	4.5	5.1	5.8	6.5	7.0	37.0
CARROLL	2.6	3.1	3.8	4.3	5.1	5.5	6.1	34.5
CARTER	2.5	2.8	3.6	4.0	4.7	5.1	5.6	35.0
CASEY	2.7	3.2	4.0	4.5	5.3	5.8	6.3	36.0
CHRISTIAN	3.0	3.4	4.3	4.9	5.7	6.3	6.8	36.5
CLARK	2.6	3.0	3.8	4.3	5.0	5.5	6.1	35.5
CLAY	2.6	3.0	3.8	4.4	5.1	5.6	6.2	36.5
CLINTON	2.8	3.3	4.2	4.7	5.5	6.0	6.5	37.0
CRITTENDEN	3.0	3.5	4.3	4.9	5.6	6.3	6.8	36.0
CUMBERLAND	2.8	3.3	4.2	4.7	5.5	6.0	6.5	37.0
DAVIESS	2.8	3.3	4.2	4.7	5.5	6.0	6.5	35.5
EDMONSON	2.8	3.3	4.2	4.7	5.5	6.0	6.5	36.0
ELLIOTT	2.5	2.8	3.6	4.1	4.7	5.2	5.7	35.5
ESTILL	2.6	3.0	3.8	4.3	5.0	5.5	6.1	35.5
FAYETTE	2.6	3.1	3.8	4.3	5.1	5.5	6.1	35.5
FLEMING	2.5	2.9	3.6	4.1	4.8	5.3	5.8	35.0
FLOYD	2.5	2.9	3.7	4.2	4.8	5.3	5.7	36.0
FRANKLIN	2.6	3.1	3.9	4.4	5.1	5.5	6.1	35.0
FULTON	3.1	3.7	4.5	5.2	5.9	6.6	7.1	37.5
GALLATIN	2.6	3.1	3.8	4.3	5.0	5.4	6.0	34.5
GARRARD	2.6	3.1	3.9	4.4	5.2	5.6	6.2	36.0

SOIL SURVEY OF
Co#21 Co#39
Co#94 **Carroll, Gallatin, and**
Owen Counties, Kentucky
ADD#7



United States Department of Agriculture
Soil Conservation Service
In cooperation with
Kentucky Agricultural Experiment Station



(Joins inset, sheet 15)

1 440 000 FEET

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and the description of the soil series to which the mapping unit belongs. In referring to a capability unit, read the introduction to the section it is in for general information about its management. Other information is given in tables as follows:

Acreage and extent, table 1, page 8.
Estimated yields, table 2, page 33.
Woodland interpretations, table 3,
page 36.

Engineering uses of the soils, tables 5, 6, and 7,
pages 42 through 51.
Limitations of soils for town and country
planning, table 8, page 52.

Map symbol	Mapping unit	Page	Capability unit	Woodland suitability group
			Symbol	Number
AlD	Alluvial land, steep-----	6	VIIe-1	----
AsA	Ashton silt loam, 0 to 4 percent slopes-----	8	I-5	1o2
Bo	Boonesboro-Alluvial land complex-----	9	Vw-1	1o1
BrC	Brashear silty clay loam, 6 to 12 percent slopes-----	10	IIIe-2	2c1
BrD	Brashear silty clay loam, 12 to 20 percent slopes-----	10	IVe-2	2c1
BsD	Brassfield silt loam, 12 to 25 percent slopes-----	11	VIe-4	4d1
EdD	Eden silty clay loam, 12 to 20 percent slopes-----	12	VIe-3	3c2
EfE3	Eden flaggy silty clay, 20 to 30 percent slopes, severely eroded-----	12	VIIe-2	3c2
ElA	Elk silt loam, 0 to 2 percent slopes-----	13	I-5	2o1
ElB	Elk silt loam, 2 to 6 percent slopes-----	13	IIe-1	2o1
ElC	Elk silt loam, 6 to 12 percent slopes-----	13	IIIe-1	2o1
FaD	Fairmount flaggy silty clay, 12 to 20 percent slopes-----	14	VIe-4	4d1
FrF	Fairmount-Rock outcrop complex, 30 to 60 percent slopes-----	15	VIIIs-2	4x1
HeC	Heitt silt loam, 6 to 12 percent slopes-----	16	IIIe-2	3c1
Hu	Huntington silt loam-----	17	I-1	1o1
LaC	Lakin loamy fine sand, 2 to 12 percent slopes-----	17	IIIs-1	3s1
Lc	Lawrence silt loam-----	18	IIIW-3	2w1
LlB	Lowell silt loam, 2 to 6 percent slopes-----	19	IIe-2	2c1
LlC	Lowell silt loam, 6 to 12 percent slopes-----	19	IIIe-2	2c1
LoD3	Lowell silty clay loam, 12 to 20 percent slopes, severely eroded-----	19	VIe-10	2c1
MaB	Markland silt loam, 2 to 6 percent slopes-----	20	IIIe-13	2c1
MbD	Markland soils, 12 to 35 percent slopes-----	20	VIIe-3	2c1
Mc	McGary silt loam-----	21	IIIW-2	3w2
Ne	Newark silt loam-----	22	IIW-1	1w1
NfB	Nicholson silt loam, 2 to 8 percent slopes-----	23	IIe-5	2o1
No	Nolin silt loam-----	23	I-1	1o1
OtA	Otwell silt loam, 0 to 2 percent slopes-----	24	IIW-3	3w1
OtB	Otwell silt loam, 2 to 6 percent slopes-----	24	IIe-4	3w1
OtC	Otwell silt loam, 6 to 12 percent slopes-----	24	IIIe-4	3w1
Ro	Robertsville silt loam-----	25	IVw-1	1w2
WnA	Wheeling silt loam, 0 to 2 percent slopes-----	27	I-5	2o1
WhD	Wheeling silt loam, 12 to 20 percent slopes-----	27	IVe-1	2o1
WoA	Woolper silty clay loam, 0 to 2 percent slopes-----	28	IIIs-2	2c1
WoC	Woolper silty clay loam, 6 to 12 percent slopes-----	28	IIIe-2	2c1
WoD	Woolper silty clay loam, 12 to 20 percent slopes-----	29	IVe-2	2c1
Zp	Zipp silty clay loam-----	30	IVw-1	1w2

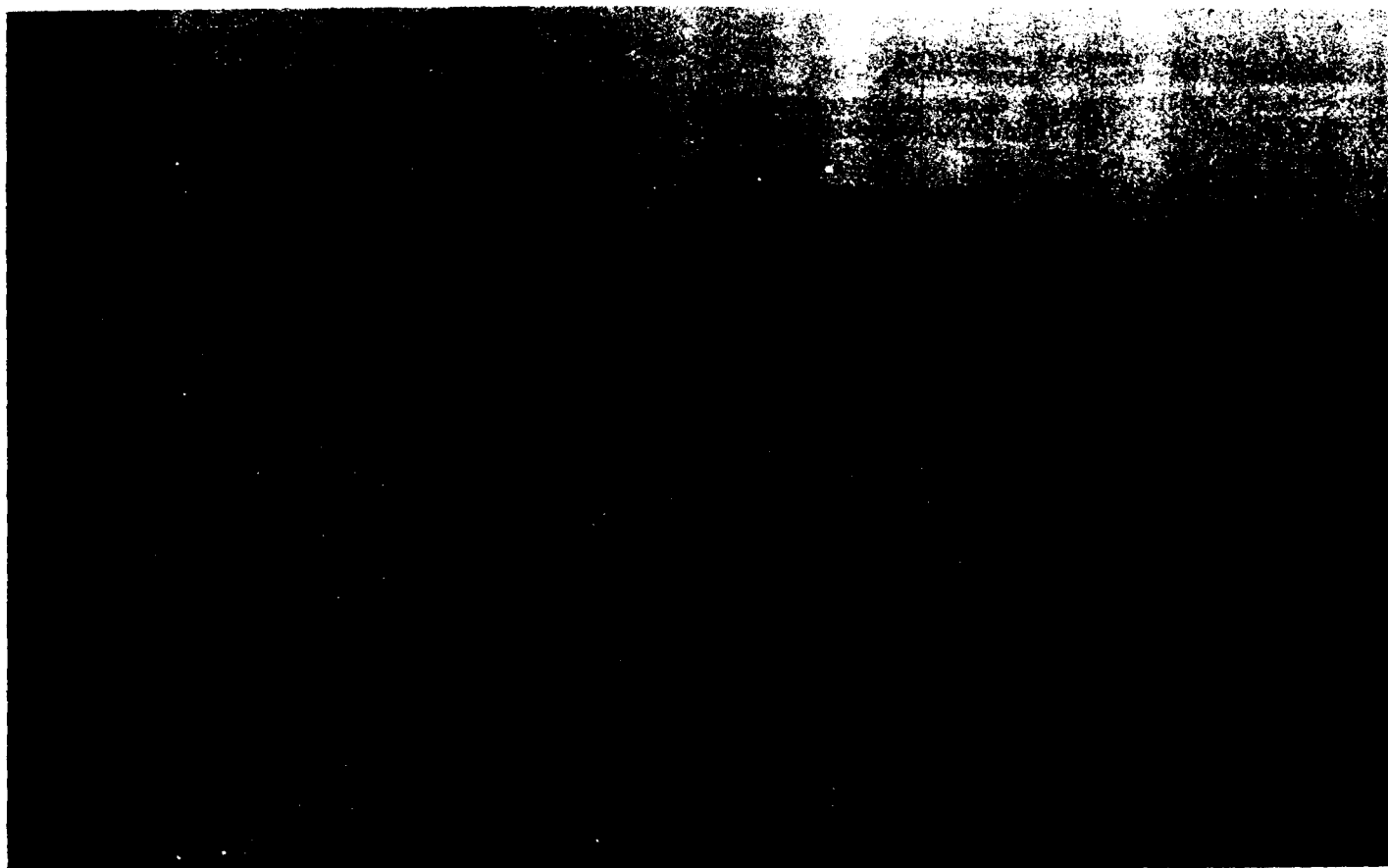


Figure 10.—Area of Robertsville silt loam where corn has been ruined by wetness.

outcrop is mapped only in a complex with Fairmount soils. It is so intricately intermingled with Fairmount soils that it could not be separated at the scale mapped.

Rock outcrop supports very little plant growth, but clumps of grass, brush, or stunted trees grow in cracks and crevices.

Wheeling Series

The Wheeling series consists of deep, well-drained, nearly level and strongly sloping soils on stream terraces along the Ohio River. These soils formed in alluvium of mixed origin. They are underlain by sand and gravel at a depth of 3 to 6 feet.

In a representative profile the surface layer is brown silt loam about 9 inches thick. The subsoil is mostly brown and extends to a depth of about 60 inches. In sequence from the top, it is about 5 inches of silt loam; about 16 inches of silt clay loam; about 8 inches of clay loam; about 16 inches of dark yellowish-brown fine sandy loam; and about 6 inches of brown gravelly sandy loam. The underlying material is stratified layers of sand, gravel, and silt.

The rooting zone is deep. Permeability is moderate. Runoff is slow or medium. Available moisture capacity is high, and organic-matter content is low. Reaction generally is slightly acid to strongly acid throughout

the profile, but the surface layer is less acid if it is limed. Natural fertility is moderate. The surface layer is easy to till and can be worked over a wide range of moisture content without clodding or crusting. These soils are flooded in some places when streamflow is unusually high.

Large areas of the towns of Warsaw and Carrollton are on these soils, and many of these areas are used for industrial and residential sites. Burley tobacco, corn, truck crops, and peach or apple orchards are grown on these soils.

Representative profile of Wheeling silt loam, 0 to 2 percent slopes, 4 miles west of Warsaw, 0.7 mile west of Markland Dam, 100 feet south of U.S. Highway No. 42:

- Ap—0 to 9 inches, brown (10YR 4/3) silt loam; moderate fine, granular structure; very friable; many roots neutral; clear, smooth boundary.
- B1t—9 to 14 inches, brown (7.5YR 4/4) silt loam; moderate, fine, subangular blocky structure; friable; many roots; few thin clay films; neutral; gradual, smooth boundary.
- B21t—14 to 30 inches, brown (7.5YR 5/4) light silty clay loam; moderate, medium, subangular blocky structure friable; common roots; common thin clay films slightly acid; gradual, smooth boundary.
- B22t—30 to 38 inches, brown (7.5YR 5/4) clay loam; moderate, medium, subangular blocky structure; friable few roots, common moderately thick clay films; medium acid; clear, smooth boundary.

B31—38 to 54 inches, dark yellowish-brown (10YR 4/4) very fine sandy loam; weak, medium, subangular blocky structure; friable; few thin clay films; strongly acid; gradual, wavy boundary.

IIB32—54 to 60 inches, brown (7.5YR 4/2) gravelly sandy loam; very weak, coarse, subangular blocky structure; very friable; a few sand grains are coated and bridged with clay; strongly acid; diffuse boundary.

IIC—60 inches +, stratified layers of loose sand, gravel, and silt.

The solum ranges from 40 to 60 inches in thickness. Bedrock is at a depth of more than 10 feet. The Ap horizon is brown (10YR 4/3) or dark grayish-brown (10YR 4/2) fine sandy loam to silt loam. The B horizon is 10YR or 7.5YR in hue, 4 or 5 in value, and 3 to 6 in chroma. The B1 and B2 horizons range from loam to light silty clay loam. The B3 horizon ranges from very fine sandy loam to gravelly sandy loam. The C horizon is stratified layers that range from very fine sand to gravel.

Wheeling soils are near Ashton, Elk, Otwell, Lakin, and Markland soils on stream terraces. They have a lighter colored A horizon than Ashton soils and a coarser textured B horizon than Elk soils. Wheeling soils are better drained than Otwell soils and lack the fragipan that is present in those soils. They are finer textured than Lakin soils and coarser textured than Markland soils.

Wheeling silt loam, 0 to 2 percent slopes (WhA).—This soil is in large smooth areas. It has the profile described as representative for the series.

Included with this soil in mapping were a few narrow areas of soils that have slopes of more than 2

percent, many small areas of soils that have a surface layer of fine sandy loam, and small areas of soils that have a subsoil of reddish-brown gravelly sandy clay below a depth of 18 to 24 inches. Also included were areas of soils that have a yellowish-brown or dark-brown surface layer.

Erosion is not a hazard on this soil.

This soil can be cropped year after year and productivity maintained if it is properly fertilized, practices are used to help maintain organic-matter content, and good tillage practices are followed. It is suited to all pasture and hay plants that are commonly grown in the area and to corn, tobacco, and small grain. In addition, it is well suited to truck crops, orchards, vineyards, and nursery stock plants (fig. 11). Capability unit I-5; woodland suitability group 2o1.

Wheeling silt loam, 12 to 20 percent slopes (WhD).—This soil is commonly in areas that are away from the Ohio River. It is in toe-slope positions at the base of the steep hills that border the river valley and in fairly long narrow areas that border the more nearly level areas of Wheeling soils. The areas range from 10 to 40 acres in size. This soil has a profile similar to the one described as representative for the series, but the surface layer is generally 4 to 7 inches thick.

Included with this soil in mapping were a few small

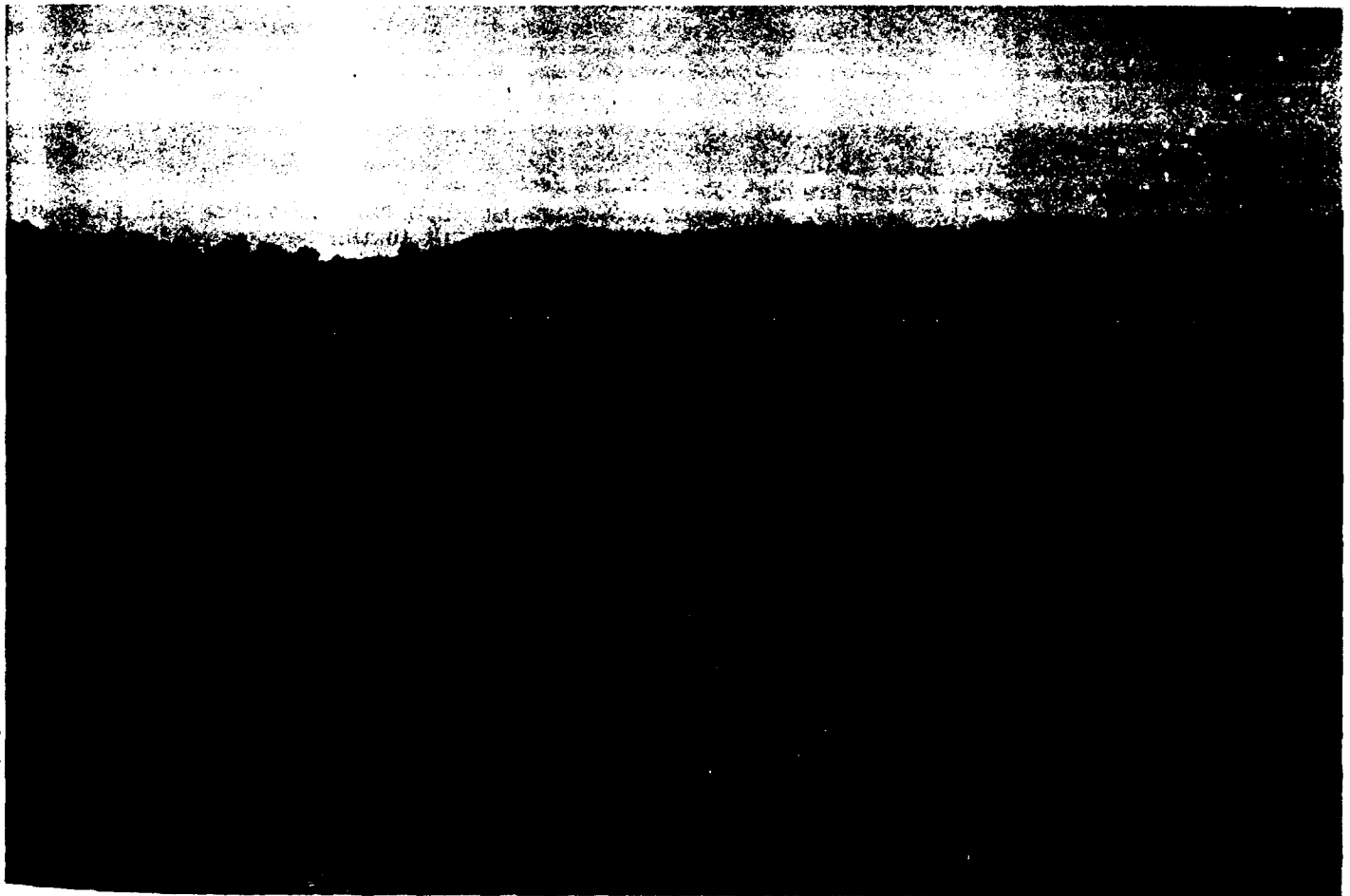


Figure 11.—Nursery stock on Wheeling silt loam.

areas of soils that have slopes of less than 12 percent, a few areas of soils that have slopes of more than 20 percent, and small areas of soils that have a fine sandy loam surface layer. Also included were small areas of soils on uplands; these soils are underlain by gravel and sand at a depth of less than 24 inches.

This soil is suited to row crops commonly grown in the area, such as corn and tobacco. It is better suited to all of the pasture and hay plants that are commonly grown in this area and to orchards, vineyards, and nursery stock plants. If this soil is cultivated, there is a very severe hazard of erosion. Consequently, cropping systems and other conservation practices are needed to slow runoff and keep soil losses to a minimum. Capability unit IVE-1; woodland suitability group 2o1.

Woolper Series

The Woolper series consists of well-drained, nearly level to strongly sloping soils or foot slopes of alluvial fans at the base of steep hills. These soils formed in colluvium or local alluvium that washed mostly from Fairmount soils.

In a representative profile the surface layer is dark-brown silty clay about 6 inches thick. The subsoil is silty clay that extends to a depth of about 54 inches. It is dark brown in the upper 9 inches, dark yellowish brown in the next 27 inches, and yellowish brown in the lower 12 inches. The underlying material is yellowish-brown silty clay that reaches to a depth of 65 inches or more.

The rooting zone is deep. Permeability is moderately slow, and runoff is medium to rapid. Available moisture capacity and organic-matter content are high. Reaction generally is slightly acid to mildly alkaline throughout the profile. Natural fertility is moderately high. The plow layer is somewhat difficult to till because of the high content of clay.

Most areas of these soils are used for hay or pasture, but some areas are used for burley tobacco or corn.

Representative profile of Woolper silty clay loam, 12 to 20 percent slopes, about 2 miles south of Carrollton, 25 yards west of State Highway No. 55, 0.25 mile south of State Highway No. 389:

- Ap—0 to 6 inches, dark-brown (10YR 3/3) silty clay loam; moderate, fine and medium, granular structure; firm; common fine roots; very dark grayish-brown (10YR 3/2) ped coatings; mildly alkaline; clear, smooth boundary.
- B21t—6 to 15 inches, dark-brown (10YR 3/3) silty clay; moderate, medium, angular blocky structure; firm; few fine roots; nearly continuous, very dark grayish-brown (10YR 3/2) clay films; few, small, soft, brown sandstone and shale fragments; mildly alkaline, clear, smooth boundary.
- B22t—15 to 42 inches, dark yellowish-brown (10YR 4/4) silty clay; moderate, fine and medium, angular blocky structure; very firm; few fine roots; many clay films; mildly alkaline; gradual, smooth boundary.
- B23t—42 to 54 inches, yellowish-brown (10YR 5/4) silty clay; weak, fine and medium, angular blocky structure; very firm; few clay films; mildly alkaline; clear, smooth boundary.
- C—54 to 65 inches +, yellowish-brown (10YR 5/4) silty clay; many, medium, faint, brown (10YR 4/3) and

grayish-brown (2.5Y 5/2) mottles; massive; very firm; few, small, dark-brown concretions; few pressure faces; mildly alkaline.

The solum ranges from 40 to 60 inches in thickness. Bedrock is at a depth of 4 feet to more than 10 feet. Coarse fragments range from 0 to 10 percent throughout the profile. The Ap horizon is dark-brown (10YR 3/3) or very dark grayish-brown (10YR 3/2 or 2.5Y 3/2) silty clay loam or silt loam. The B21t horizon has the same color range as the Ap horizon, and its texture is heavy silty clay loam or silty clay. The B22t and B3t horizons range from brown (7.5YR 4/4 or 10YR 4/3) to light olive brown (2.5Y 5/6) silty clay or clay. Some profiles have gray mottles below a depth of about 2 feet. The matrix and mottles of the C horizon are in shades of brown, gray, or olive. The C horizon is silty clay or clay in texture.

Woolper soils are near Brashear, Eden, Fairmount, Boonesboro, Huntington, Nolin, Newark, and Zipp soils. They are darker colored than Brashear and Eden soils and deeper to bedrock than Fairmount or Boonesboro soils. Woolper soils are finer textured than Huntington, Nolin, and Newark soils and are better drained than Zipp soils.

Woolper silty clay loam, 0 to 2 percent slopes (WoA).—This soil is in long, narrow areas on low-lying stream terraces and alluvial fans. The areas range from 10 to 30 acres in size. Areas of this soil are often flooded during winter, but damage to crops is slight during the growing season. This soil has a profile similar to the one described as representative for the series, but gray mottles are commonly at a depth of 24 to 36 inches.

Included with this soil in mapping were small areas of soils that have slopes of more than 2 percent; a few, small, poorly drained areas of soils; and small areas of soils that have a surface layer of dark grayish-brown silt loam 4 to 10 inches thick. Also included were areas of soils that have rock at a depth of less than 4 feet.

Erosion is not a hazard on this soil. This soil is somewhat difficult to till, because of the moderately fine-textured plow layer.

This soil can be cropped year after year and productivity maintained if the soil is properly fertilized, practices are used to help maintain organic-matter content, and good tillage practices are followed. Such crops as alfalfa and small grain may be damaged by flooding in winter and early in spring. Some of the better suited pasture and hay plants are tall fescue, orchardgrass, smooth brome, timothy, ladino clover, annual lespedeza, and sericea lespedeza. Capability unit IIs-2; woodland suitability group 2c1.

Woolper silty clay loam, 6 to 12 percent slopes (WoC).—This soil is in narrow bands below Fairmount soils at the base of hills. The areas range from 10 to 40 acres in size.

Included with this soil in mapping were a few, small, seepy areas and small areas of soils that have slopes of less than 6 percent.

This soil is suited to crops commonly grown in the area, such as corn, tobacco (fig. 12), and small grain. Among the better suited pasture and hay plants are orchardgrass, tall fescue, timothy, alfalfa, red clover, white clover, sericea lespedeza, and annual lespedeza. If this soil is cultivated, there is a severe hazard of erosion. Consequently, cropping systems and other conservation practices are needed to slow runoff and keep

TABLE 5.—Estimated soil properties

Soil series and map symbols	Depth to—		Depth from surface	Classification			Coarse fraction greater than 3 inches
	Seasonal high water table	Bedrock		USDA texture	Unified	AASHO ¹	
Nicholson NtB—Continued			36-60	Silty clay	MH or CH	A-7	
Nolin: ² No	>3	>4	0-60	Silt loam	CL or ML	A-6 or A-4	
Otwell: ² OtA, OtB, OtC	1½-2	>5	0-8 8-21 21-63	Silt loam Silty clay loam Silty clay loam (fragipan).	ML or CL CL or ML CL or ML	A-6 or A-4 A-6 A-6	
Robertsville: ² Ro	0-½	>5	0-18 18-60	Silt loam Silty clay loam (fragipan).	ML or CL CL or ML	A-4 A-6	
Wheeling: ² WhA, WhD	>5	>10	0-14 14-30 30-38 38-54 54-60	Silt loam Silty clay loam Clay loam Very fine sandy loam Gravelly sandy loam	ML-CL ML-CL ML ML or SM SM	A-4 A-6 A-4 A-4 A-2	
Woolper: WoA, WoC, WoD	>3	>4	0-6 6-60	Silty clay loam Silty clay or clay	CL CL, MH or CH	A-6 A-7	0-15 0-15
Zipp: ² Zp	0-½	>10	0-5 5-60	Silty clay loam Silty clay or clay	CL MH, CH or CL	A-7 or A-6 A-7	

¹ Estimates based on 100 percent passing the 3-inch sieve.² Floods during periods of unusually high streamflow.

merical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which the soil material is plastic.

Town and Country Planning

The limitations of the soils should be considered in planning town and country uses of land. In table 8 the degree and kind of limitations for each soil in this survey are listed for 11 different uses. The information is not intended to eliminate the need for onsite investigations for specific uses, but to serve as a guide for screening sites and for planning more detailed investigations. A rating of *slight* indicates that the limitations, if any, are of minor consequence and are easy to overcome. A rating of *moderate* indicates that corrective measures are needed to overcome the limitation when the soil is used. Cost of corrective measures is an important consideration. A rating of *severe* indicates that corrective measures are needed to overcome the limitations. These measures may be too expensive to justify. Any limitation, however, can be overcome by adequate corrective measures.

The kinds of limitations, expressed in terms of soil characteristics or properties, are shown only for the moderate and severe ratings. Some of the terms may have special meaning. These are defined in the Glossary at the back of this survey.

The criteria used to rate the soils vary somewhat among the different uses. The ratings in table 8 are described in the following paragraphs:

The ratings for septic tank filter fields are based on soil permeability, depth to seasonal high water table, depth to bedrock, surface rockiness and stoniness, slope, and hazard of flooding. Possible pollution hazards to a water supply source are not a consideration here, but this would be a severe limitation on some soils such as those of the Lakin series.

Sewage lagoons are shallow ponds that are used for disposal of sewage by oxidation. The ratings for this use are based on permeability (basin floor), slope, depth to bedrock, percent of coarse fragments, surface stoniness, class of soil material at the site, hazard of flooding, and organic-matter content in the soil.

Sanitary landfills are areas used for disposal of trash and garbage. It is assumed that the operation will be by trench method. No importation of fill or cover material is considered in the ratings. The ratings are based on depth to seasonal high water table, slope, depth to bedrock, surface stoniness and rockiness, texture of the surface layer, and hazard of flooding.

The soils are rated for shallow excavations for basements, pipelines, cemeteries, etc. The ratings are based on the soil properties that affect the ease and amount of excavation. Included are depth to seasonal water table, slope, depth to bedrock, texture, stoniness, and percentage of coarse fragments.

The soils are rated for low building foundation. The ratings are for undisturbed soils that are used to support foundation footings for houses, or other low buildings no higher than three stories. Footings are

significant to engineering—Continued

Percentage less than 3 inches passing sieve—				Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity to—	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)					Uncoated steel	Concrete
100	100	95-100	90-95	<0.2	0.08-0.15	5.6-7.8	High	High	Low.
100	100	90-100	70-90	0.6-2.0	0.19-0.23	6.6-7.8	Low	Low	Low.
100	100	90-100	70-90	0.6-2.0	0.19-0.23	5.1-6.5	Low	Moderate	Moderate.
100	100	95-100	75-95	0.6-2.0	0.17-0.21	4.5-5.5	Low	Moderate	Moderate.
100	100	95-100	85-95	<0.2	0.06-0.14	4.5-5.5	Moderate	Moderate	High.
100	100	90-100	70-90	0.6-2.0	0.19-0.23	4.5-6.5	Low	High	Moderate.
100	100	95-100	85-95	<0.2	0.06-0.14	4.5-5.5	Moderate	High	Moderate.
100	100	90-100	70-90	0.6-2.0	0.19-0.23	6.6-7.3	Low	Low	Low.
100	100	95-100	75-95	0.6-2.0	0.17-0.21	6.1-6.5	Low	Moderate	Low.
100	100	90-100	70-80	0.6-2.0	0.16-0.17	5.6-6.0	Low	Low	Moderate.
100	100	70-85	40-55	2.0-6.0	0.08-0.10	5.1-5.5	Low	Low	Moderate.
80-95	75-90	50-60	20-30	>6.0	0.05-0.07	5.1-5.5	Low	Low	Moderate.
95-100	95-100	90-100	80-95	0.2-0.6	0.17-0.21	6.1-7.8	Moderate	Moderate	Low.
95-100	95-100	90-100	85-95	0.2-0.6	0.15-0.18	6.1-7.8	High	High	Low.
100	100	95-100	85-95	0.6-2.0	0.17-0.21	6.6-7.8	Moderate	High	Low.
100	100	95-100	85-95	<0.2	0.15-0.18	6.6-7.8	High	High	Low.

* Subject to flooding.

* Perched water table.

assumed to be 1 foot wide and a minimum of 18 inches deep. The ratings are based on the depth to the seasonal high water table, depth to bedrock, slope, surface rockiness and stoniness, hazard of flooding, and shrink-swell potential. Slope is more restrictive for subdivision locations than for other areas.

Camp areas are areas used for tents and trailers. The ratings for this use are based on depth to bedrock, permeability, depth to seasonal high water table, surface rockiness and stoniness, texture of surface layer, and hazard of flooding. Slope is more restrictive for trailer parks than for tent areas.

The ratings for streets and low-cost roads are based on depth to seasonal high water table, slope, depth to rock, surface rockiness and stoniness, hazard of flooding, and shrink-swell potential. Slope is a more restrictive factor for parking lots and streets than for main highways.

Playgrounds are areas used intensively for team sports such as baseball, football, volleyball, and other sports that normally require a nearly level, finished area and are subject to heavy foot traffic. The ratings are based on depth to seasonal high water table, soil permeability, slope, depth to bedrock, surface rockiness and stoniness, texture of the surface layer, and hazard of flooding.

Picnic areas are subject to less intensive use than playgrounds. The ratings are based on depth to seasonal high water table, slope, depth to bedrock, surface stoniness and rockiness, texture of the surface

layer, and hazard of flooding. These factors are less restrictive for picnic areas than for playgrounds.

The soils are rated for lawns and landscaping with the assumption that soil material at the site, rather than trucked-in fill or topsoil, will be used. The ratings are based on depth to seasonal water table, slope, depth to bedrock, surface stoniness and rockiness, texture of the surface layer, and hazard of flooding.

The ratings for paths and trails are for nonintensive uses such as cross-country hiking and bridle paths that allow random movement of people. It is assumed that the areas will be used as they occur in nature. The ratings are based on depth to seasonal high water table, slope, surface rockiness and stoniness, texture of the surface layer, and hazard of flooding.

Formation and Classification of the Soils

This section has two parts. In the first part, the factors of soil formation and their relation to the soils in Carroll, Gallatin, and Owen Counties are described. In the second part, the system of soil classification is briefly described, and the soil series are placed in some categories of the system.

Factors of Soil Formation

The characteristics of soils depend on climate, on the physical and chemical composition of parent material, on relief, on plant and animal life, and on time. The relative importance of these factors is not con-

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DIVISION OF WATER
FRANKFORT, KENTUCKY 40601

PERMIT TO WITHDRAW PUBLIC WATER

Permit Number: 0586

Issued to: Dow Corning Corporation
4770 Highway 42E
Carrollton. Kentucky 41008

The Natural Resources and Environmental Protection Cabinet authorizes the above named party to withdraw Public Water of the Commonwealth of Kentucky. This permit has been issued under provisions of KRS Chapter 151.125, 151.140 and 151.150 and regulations promulgated with respect to the withdrawal of public waters. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet, or other state, federal or local agencies. Withdrawals are restricted to the stated quantities, times and locations specified below. This permit represents a limited right of use and does not vest ownership nor absolute right to withdrawal or use of Public Water, nor does it guarantee that requested amounts will be available for use at all times. In times of drought or emergency, the Cabinet may temporarily alter the conditions of the permit. Any violation of the Water Resources Act of 1966 as amended is subject to penalties as set forth in KRS 151.990 and other applicable provisions of law.

The location of the authorized water withdrawal is as follows:
from a field of 13 wells located on company property, approximately
3.0 miles east of Carrollton, on the Ohio River at RMI 441.5
(541 bP), in Carroll County.

Lat. Long.
38°42'38"N 85°06'10"W

Water withdrawals are limited to the following rates from the specified location:

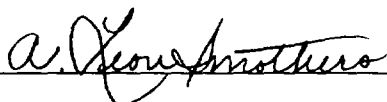
Jan 12 mgd	Apr 14 mgd	July 15 mgd	Oct 14 mgd
Feb 12 mgd	May 14 mgd	Aug 15 mgd	Nov 13 mgd
Mar 13 mgd	June 15 mgd	Sept 15 mgd	Dec 12 mgd

Conditions to this permit are as follows: Withdrawal rates must be accurately measured by meter or other device, as approved by the Cabinet.

Withdrawals from these wells shall not interfere with any existing users in the area. If such withdrawals have an adverse effect on previously permitted or other lawful users in the area, the company shall reduce withdrawals to rates that no longer cause adverse effects, or shall provide all affected users with sufficient water to meet their needs.

Issued: August 18, 1967

Latest Revision: December 7, 1994



Manager, Water Resources Branch
Division of Water

OHIO RIVER MAIN STEM

03277200 OHIO RIVER AT MARKLAND DAM, KY

LOCATION.--Lat 38°46'29", long 84°57'52", Gallatin County, Hydrologic Unit 05090203, at left end of Markland Dam, 0.4 mi upstream from Stephens Creek, 3.4 mi west of Warsaw, and at mile 531.5.

DRAINAGE AREA.--83,170 mi², approximately.

PERIOD OF RECORD.--May 1970 to current year.

REVISED RECORDS.--WDR KY-88-1: 1987.

GAGE.--Gate opening and water-stage recorders on left bank. Turbine recorders in powerplant on right bank. Datum of headwater gage 0.5 mi upstream is 443 ft Ohio River datum. Datum of tailwater gage 0.4 mi downstream is 35 ft lower.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 11, 15-24, 30, Dec. 1-17, 31, Feb. 1-12, May 6 to Aug. 3, and Sept. 1-30. Records poor. Daily discharge computed from U.S. Army Corps of Engineers' Lock books and turbine flows. Flow regulated by Ohio River system of locks, dams, and reservoirs upstream from station.

COOPERATION.--U.S. Army Corps of Engineers.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 26, 1937, reached a stage of 76.1 ft (tailwater gage).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33800	22400	118000	112000	106000	128000	382000	248000	28300	33200	15100	15000
2	28500	24800	102000	140000	96700	111000	379000	213000	39200	56700	18800	17200
3	42700	42100	87500	164000	76400	126000	371000	185000	18700	107000	12700	21400
4	41700	27100	71500	173000	88400	190000	357000	155000	28300	85500	20500	35900
5	28600	45500	57000	215000	57700	313000	337000	142000	60700	90400	23600	51500
6	28000	56700	51700	213000	49000	372000	299000	121000	66400	89800	15500	34000
7	29400	60000	53800	218000	48700	375000	262000	108000	85600	68000	16400	28200
8	30200	59300	43300	226000	49000	305000	238000	106000	53500	38600	20600	6900
9	30400	70200	54200	222000	40900	319000	224000	84900	44400	34600	17700	23100
10	32300	65600	42900	212000	33700	373000	211000	77600	71400	36300	12400	17800
11	33300	53900	56000	199000	39600	345000	211000	60300	86400	24400	10100	19300
12	30000	65000	83000	188000	56900	309000	198000	67000	88300	30300	19500	14300
13	31900	90000	91600	194000	56800	284000	189000	76400	79600	44400	24500	14100
14	34700	126000	89900	201000	78200	255000	193000	87600	62000	41200	26500	16900
15	24200	131000	86300	214000	77900	222000	198000	74300	91000	48100	38000	15400
16	20500	141000	69400	224000	78200	187000	201000	69000	54500	39500	27100	14300
17	18000	122000	69100	224000	108000	181000	190000	53800	39500	23600	21100	14900
18	15700	98800	122000	202000	139000	240000	181000	53100	35300	34000	22600	17100
19	44900	85200	191000	174000	144000	287000	186000	55500	17900	19400	22500	13700
20	47100	65100	241000	151000	126000	312000	189000	57800	21000	33400	26200	19800
21	26600	47700	239000	144000	138000	311000	179000	57900	21800	26600	12900	17400
22	23500	75800	221000	160000	230000	299000	162000	56200	22100	40000	13600	19300
23	28000	119000	217000	174000	285000	317000	152000	48600	22000	40900	17900	18800
24	30400	131000	215000	213000	327000	346000	150000	45700	33200	14400	20000	16600
25	30400	150000	207000	232000	314000	369000	156000	34600	22700	12900	17500	15700
26	32200	168000	200000	224000	259000	388000	202000	34100	26000	19400	16600	18000
27	27800	170000	185000	226000	185000	386000	224000	26400	17000	14300	13600	24800
28	21100	167000	156000	221000	150000	377000	278000	37100	21200	17700	10500	34800
29	21900	156000	122000	193000	---	385000	295000	22200	26400	18900	16200	42600
30	25500	133000	93000	159000	---	384000	289000	25200	32500	19900	14700	46800
31	28800	---	84200	136000	---	385000	---	36700	---	20000	11500	---
TOTAL	920100	2768200	3720400	5948000	3419100	9181000	7083000	2520000	1316900	1223400	576400	665600
MEAN	29680	92310	120000	191900	122100	296200	236100	81290	43900	39460	18590	22190
MAX	47100	170000	241000	232000	327000	388000	382000	248000	91000	107000	38000	51500
MIN	15700	22400	42900	112000	33700	111000	150000	22200	17000	12900	10100	6900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1993, BY WATER YEAR (WY)

	MEAN	52660	89110	151100	146200	175100	208900	183100	130700	87980	61280	45210	42710
MAX	144100	230600	288700	289900	291200	335400	292200	286300	219100	109500	146200	143800	
(WY)	1980	1986	1973	1974	1975	1975	1972	1983	1981	1972	1980	1978	
MIN	13910	26500	42150	34060	77100	98440	61160	43510	16250	18530	13060	15500	
(WY)	1992	1992	1990	1977	1992	1990	1986	1976	1988	1988	1988	1983	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1970 - 1993

ANNUAL TOTAL	31015800	39343100	
ANNUAL MEAN	84740	107800	114500
HIGHEST ANNUAL MEAN			157300
LOWEST ANNUAL MEAN			60450
HIGHEST DAILY MEAN	292000	Mar 22	542000
LOWEST DAILY MEAN	15700	Oct 18	4320
ANNUAL SEVEN-DAY MINIMUM	24600	Oct 27	7310
INSTANTANEOUS PEAK STAGE			43.96
10 PERCENT EXCEEDS	167000		55.25
50 PERCENT EXCEEDS	68000		257000
90 PERCENT EXCEEDS	29100		79700
			21800